**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, DC 20554**

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| In the Matter of | ) | |
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| Promoting Investment in the 3550-3700 MHz Band | ) | GN Docket No. 17-258 |
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| Petitions for Rulemaking Regarding the Citizens Broadband Radio Service in the 3550-3700 MHz Band | ) | RM-11788 (Terminated) |
| | ) | RM-11789 (Terminated) |
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## COMMENTS OF STARRY, INC.

Starry, Inc. (Starry)[1] submits these comments respectfully urging the Federal Communications Commission (FCC or Commission) to maintain and reaffirm the existing rules for the 3.5 GHz Citizens Broadband Radio Service (CBRS or 3.5 GHz band).

The record in response to the Petitions for Rulemaking (Petitions)[2] in the above captioned proceeding demonstrates overwhelming support for maintaining a regulatory structure for CBRS that facilitates dynamic access to spectrum by a wide array of users, from Wireless Internet Service Providers (WISPs), to large scale manufacturers, to cable operators, and others.[3] The existing rule structure already balanced the costs and benefits of the alternatives set out in the *2017 3.5 GHz NPRM*,[4] and the result is a massive and thriving ecosystem of a diverse set of operators, vendors, and user groups all anxious to access this spectrum. However, instead of

[1] Starry, Inc., is a Boston- and New York-based technology company that is utilizing millimeter waves to re-imagine last-mile broadband access as an alternative to fixed wireline broadband. Starry is currently deploying its proprietary fixed 5G wireless technology in the Boston-area, with plans to expand to our presence to additional U.S. cities in 2018.

[2] *See* CTIA Petition for Rulemaking, GN Docket No. 12-354 (filed June 16, 2017); T-Mobile Petition for Rulemaking, GN Docket No. 12-354 (filed June 19, 2017) (collectively, Petitions).

[3] *See* Comments of the Wireless Internet Service Providers Association, GN Docket No. 12-354 (filed July 24, 2017) (WISPA Petition Comments); Comments of Charter Communications, GN Docket No. 12-354 (filed July 24, 2017) (Charter Petition Comments); Comments of Vivint Wireless, GN Docket No. 12-354 (filed July 24, 2017) (Vivint Petition Comments); Comments of NCTA – The Internet & Television Association, GN Docket No. 12-354 (filed July 24, 2017) (NCTA Petition Comments); Reply Comments of the General Electric Company, GN Docket No. 12-354 (filed Aug. 8, 2017) (GE Petition Reply Comments).

[4] *Promoting Investment in the 3550-3700 MHz Band; Petitions for Rulemaking Regarding the Citizens Broadband Radio Service*, Notice of Proposed Rulemaking and Order Terminating Petitions, 32 FCC Rcd 8071 (2017).

encouraging investment from these entities, the Commission has injected a level of uncertainty regarding the future of access to this spectrum. The Commission can rectify this situation by maintaining the existing rule structure.

The U.S. was poised to be a world leader in making this valuable mid-band spectrum available for a variety of users, and doing so in a way that would maximize the economic activity associated with the use of the spectrum. We respectfully and strongly urge the Commission to decline to adopt its proposed rule changes and expeditiously conclude this proceeding, thereby paving the way for substantial and immediate investment in this band.

## I. LONGER LICENSE TERMS AND RENEWABILITY UNNECESSARILY COMPLICATE THE LICENSING STRUCTURE WITH NO BENEFIT

The 3.5 GHz band is designed to provide spectrum access where and when it is needed.[5] The rules accomplish this in several ways, including by requiring users to regularly make business decisions regarding whether they continue to need an exclusive license.[6] In this way, the license is a cost associated with constructing and operating a network, rather than an asset that retains value apart from its utility within the network.

The outcome is economically efficient and market-oriented. Licensees may acquire exclusive rights when necessary, not when the FCC presumes it is necessary.

The Commission created a simple rule structure around this market solution, starting with three-year license terms. A licensee that decides it does not need a license – if the cost exceeds the benefit – simply does not bid in the next auction. This structure is not a disincentive to invest, nor does it result in stranded investment as Petitioners suggest.[7] Instead, it creates a rational process in which if the incentives do exist for a licensee to acquire exclusive rights – for instance in a competitive market – a licensee can participate in the auction and gain exclusivity to protect its investment on a recurring three-year basis. But if the incentives change over time, a licensee can shift to operating on a General Authorized Access basis with its existing network, thereby continuing to generate revenue with its existing capital investment.

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[5] *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, WT Docket No. 12-354, Order on Reconsideration and Second Report and Order, 31 FCC Rcd 5011, 5024 ¶ 52 (2016) (*3.5 GHz Order on Reconsideration*).

[6] *Id.* at 5022 ¶ 44.

[7] *See id*.

If the Commission moves away from this model, it is creating additional complications that will require it to take further actions to unwind a regulatory structure that *is already* stimulating innovation and investment.[8]

For instance, longer license terms with renewability statutorily require the Commission to impose construction requirements.[9] Adding construction requirements to CBRS, regardless of the license size, will substantially increase the regulatory and administrative burden on licensees and the Commission. Over the next few years, the Commission will have to review construction filings in the AWS-4 band, the H Block, the AWS-3 band, the 600 MHz band, and a variety of millimeter wave bands. Adding CBRS licenses – regardless of the license size – will significantly increase this substantial administrative burden. Commissioner O'Rielly has rightly pointed out that construction obligations have been ineffective, and has shown leadership on ways to enhance construction requirements to make sure that licensees are actually putting spectrum to use;[10] adding thousands of additional licenses to the Commission's burden will only exacerbate the problem.

Construction requirements increase the administrative burdens on licensees, too. Under the current rule structure, there is no burden to a licensee holding licenses (even tens of thousands of licenses). Under the existing rules, once a license is issued, the licensee does not have to make any additional regulatory filings. However, even if licenses are based on PEAs, licensees may have to make thousands of construction filings. This is an unnecessary additional complication and administrative expense on all licensees.

By keeping license terms at three years and requiring licensees to re-acquire the license at auction, the Commission will continue to rely on market forces to make decisions regarding the need for exclusivity (instead of presuming to know when it is necessary), keep the CBRS rules simple, and minimize administrative costs.

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[8] *See* Comments of Federated Wireless, GN Docket No. 12-354 (filed July 24, 2017), at 3-4.

[9] 47 U.S.C. § 309(j)(3)-(4) (requiring the Commission to design a system of competitive bidding that promotes economic opportunity, "the efficient and intensive use of the electromagnetic spectrum," and prescribe regulations that "include performance requirements, such as appropriate deadlines and penalties for performance failures . . . [and] prevent stockpiling or warehousing").

[10] *See Request for Further Comment on Issues Related to Competitive Bidding Proceeding; Updating Part 1 Competitive Bidding Rules*, WT Docket No. 14-170, GN Docket No. 12-268, RM-11395, WT Docket No. 05-211, Public Notice, 30 FCC Rcd 4153, 4182 (dissenting opinion of Cmr. O'Rielly).

## II. CENSUS TRACT-SIZED LICENSES BEST SERVE THE NEEDS OF ALL USERS

The 3.5 GHz band is one of the only truly flexible spectrum bands that the Commission has ever created. Most spectrum used to provide commercial services is generally used for either fixed or mobile, and the rules reinforce that use. Despite policies over the last 20 years to promote the flexible use of spectrum, the fact remains that technical, service, and auction rules tend to be designed to serve one particular use case.

In CBRS, however, the Commission created rules that serve fixed and mobile use cases by disparate users simultaneously. It did this by reflecting upon the success of the various modes of spectrum access it has historically deployed, and combining the most effective portions of each into one comprehensive regulatory paradigm. This structure relies on traditional geographic area mobile licensing, fixed point-to-point and point-to-multipoint licensing, unlicensed, and other modes of non-exclusive licensing in a well-considered balance.

Altering this structure in one way or another will inherently impact this balance in favor of one outcome or user group over another. The Commission has already considered *all* the licensing alternatives, and developed a paradigm that has objectively created a substantial amount of investment and innovation in large part because it is actually capable of serving multiple user groups, not just one.[11]

### A. Partitioning and Disaggregation is an Inefficient Way to Meet the Same Needs as Small License Areas

The Commission solved the problem of meeting both large and small providers' needs by making licenses available on a relatively small geographic basis (that scales with population) while allowing unlimited geographic aggregation. The license areas also consolidate into larger license areas traditionally favored by mobile carriers, allowing them to match existing license areas, including Partial Economic Areas (PEA).

Historically, there is a very limited secondary market for access to spectrum held by mobile wireless carriers.[12] This is likely for several reasons, including assumptions about the economic value of full licenses as assets versus partial licenses, a reasonable desire to maintain control over the entire spectrum environment within a geographic area or frequency block, or

[11] *See generally 3.5 GHz Order on Reconsideration*, 31 FCC Rcd at 5012.

[12] *See Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, WT Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 3993 (2015) (*3.5 GHz First R&O*); Reply Comments of the Rural Wireless Association, WT Docket No. 10-112 (filed Oct. 31, 2017), at 4-5.

competitive reasons. In any event, without incentives for licensees to engage in secondary market transactions, it should not be relied upon as a strategy for making licenses available for users that desire small license areas. Since the proposal relies on a flawed and unsupported premise, it should be rejected.

Further, the costs associated with using partitioning and disaggregation as the tools to make spectrum available on a smaller geographic basis outweigh any benefits. The record in response to the Petitions clearly demonstrates substantial demand for small license area sizes.[13] However, the users that demand smaller license areas generally have fewer resources to devote to the complicated process of negotiating with a large mobile operator for access to a portion of a license (in the event that the mobile licensee would even enter into negotiations).

In addition, partitioning and disaggregation are private transactions in which there is no public price discovery before or after the transaction. Smaller licensees are likely to pay more through this process than they would at an auction where price discovery occurs at the end of each bidding round. The result is incredibly inefficient – users that demand smaller licenses are subjected to larger licensees extracting maximum rent for access, if they even decide to partition or disaggregate their licenses.

On the other side, for users who desire larger license areas, they simply have to aggregate census tracts at auction. There are ways for the Commission to make this process simple and easy, including by designing a graphical user interface within the bidding system that allows for easy bidding across a large number of licenses. In addition, the marginal cost of a bidder designing an auction bidding strategy to aggregate smaller license areas is likely far less than the cost of negotiating with potentially hundreds of other users to partition or disaggregate portions of their licenses.

The Commission has already adopted a license size that minimizes the costs associated with meeting the needs of both users that desire small license areas and those that desire large

[13] *See* WISPA Petition Comments; Charter Petition Comments; Vivint Petition Comments; NCTA Petition Comments; GE Petition Reply Comments; Comments of Nokia, GN Docket No. 12-354 (filed July 24, 2017); Comments of Sony Corporation, GN Docket No. 12-354 (filed July 21, 2017); Comments of Virginia Everywhere, LLC dba All Points Broadband, GN Docket No. 12-354 (filed July 21, 2017); Comments of Hudson Valley Wireless, GN Docket No. 12-354 (filed July 21, 2017); Comments of the Dynamic Spectrum Alliance, GN Docket No. 12-354 (filed July 24, 2017); Comments of Starry, Inc., GN Docket No. 12-354 (filed July 24, 2017); Comments of Google Inc. and Alphabet Access, GN Docket No. 12-354 (filed July 24, 2017); Comments of Southern Linc, GN Docket No. 12-354 (filed July 24, 2017); Joint Comments of the Rural Wireless Association, Inc. and NTCA-The Rural Broadband Association, GN Docket No. 12-354 (filed July 24, 2017).

license areas.[14] The Commission should retain the originally-adopted census tract geographic areas instead of dramatically increasing the real and actual costs of all users.

### B. Smaller License Areas in the 3.5 GHz band Will Increase Net Investment from All Users

The CBRS technical rules are specifically designed to support local area uses, built on a record of evidence that the 3.5 GHz band would be most useful to mobile operators as a means of adding capacity.[15] In addition, as a matter of physics, the 3.5 GHz band lacks the propagation characteristics most useful for coverage networks. In combination, by physics and design, the 3.5 GHz band is a local area band.

The Petitioners suggest that larger license area sizes in the 3.5 GHz band will incentivize investment by mobile wireless carriers, but offer no concrete evidence. If the need for additional capacity is in targeted parts of urban areas, or discrete locations in suburban areas, why would a provider need exclusive use of spectrum in the rural areas of a PEA? There is no rational reason why holding rights to geographic areas that a licensee does not intend to serve somehow incentivizes its investment in areas that it does intend to serve.

Alternatively, smaller providers, including WISPS, do not need and generally will not be able to acquire licenses that cover large geographic areas and multiple urban centers.[16] This is true for both WISPs that cover urban areas and those that cover suburban or rural areas. Census tracts allow urban WISPs to strategically select parts of a city that they may want to cover, instead of having to acquire the PEA that covers an entire city and much of the surrounding area. For instance, the PEA that includes Boston, PEA 7, covers over half of Massachusetts and all of Rhode Island.[17] Most WISPs will likely be prohibited from acquiring such large licenses, whether they provide a competitive broadband service in urban areas, or are the only option for broadband in a suburban or rural area. The Commission can best serve the needs of *all* licensees by maintaining census tracts as the geographic basis for licenses in the 3.5 GHz band.

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[14] Furthermore, if the Commission relies on partitioning and disaggregation to serve users that demand smaller geographic areas, it would be allowing a private actor to extract value from a public resource instead of that value accruing to the treasury in the benefit of the public.

[15] *3.5 GHz First R&O*, 30 FCC Rcd at 3691-93, ¶¶ 1-8.

[16] *See* WISPA Petition Comments at 22-25.

[17] *See* FCC Partial Economic Area (PEA) Boundaries, https://apps.fcc.gov/edocs_public/attachmatch/DA-14-759A4.pdf.

### C. The Commission is Sophisticated Enough to Design an Auction for Census Tracts

The Commission has decades of experience creating auctions that are tailored to solve a variety of complicated auction problems, and holding an auction with a large number of licenses is very solvable.

For example, Professor Milgram, a world-renowned auction economist who helped design the very successful Incentive Auction, suggests that a 3.5 GHz auction could be a very simple auction based on a simultaneous, multiple round clock auction design.[18] Professor Milgram argues that "[t]he characteristics of the 3.5GHz spectrum and the FCC's priority licensing scheme obviate the need for the relatively complex auction designs that have been used to sell licenses for other frequencies."[19]

These issues should properly be addressed through the Auction Comment Public Notice and should not drive a policy decision about the license size. The mere quantity of licenses included in the auction is no reason to alter the license size.

## III. PUBLICLY IDENTIFYING CBSD LOCATIONS SERVES THE PUBLIC INTEREST AND DOES NOT CREATE A COMPETITIVE HARM OR SECURITY RISK

We strongly urge the Commission to retain the requirement that citizens broadband service device (CBSD) location information be publicly disclosed. This requirement enhances public transparency in how a public resource is utilized, and is built on decades of wireless carriers, public safety entities, and others identifying the locations of the transmitters that are the basis for their authorizations.

The 3.5 GHz rules rely in part on historical rules for fixed systems and original cellular systems in which coordination among licensees is achieved specifically by knowing the exact location of transmitting elements in the band. There is no doubt that the Spectrum Access System (SAS) Administrators require this information to effectively coordinate access to the band. The public, too, has an interest in knowing where network elements are deployed – licensees are, after all, using the spectrum under licenses granted on behalf of the public. This Commission has

[18] Letter from Paul Milgrom, Auctionomics Inc., to Marlene H. Dortch, FCC Secretary, GN Docket No. 12-354 (filed Aug. 8, 2017) at 1, 7.

[19] *Id.* at 7.

repeatedly committed to increasing public transparency, and it should reaffirm that commitment here.[20]

The argument that disclosing such information causes competitive harm or increases security risks is completely unfounded. Wireless providers frequently publish coverage maps showing their coverage areas. Wireless providers are also required to disclose this information in their construction filings, which are publicly available. While coverage information does not include the exact coordinates of the licensees' base stations, it is very clear where a provider is and is not operating and providing service. There are also myriad unofficial sources of network coverage information on the internet, which while they may be imperfect, do offer additional granularity into an operators' coverage area.[21] There is no additional competitive harm that would come from knowing the precise locations of transmitters in such an arrangement.

Furthermore, because the 3.5 GHz band is likely to be used to add capacity to existing networks, a wireless provider's use of the band will necessarily be in areas that it already serves. Knowing that a wireless provider is adding CBSDs in a given location just makes clear what is already obvious – wireless carriers are adding capacity in their networks in areas that predictably require more capacity.

Instead of attempting to resolve a claimed competitive harm by obfuscating location information, the Commission will actually hamper competitive access to the band. Existing competitive providers or new entrants will lack sufficient information about the availability of spectrum – only after going through a network planning and coordination process to register CBSDs will they discover whether sufficient spectrum at a specific location exists. This adds to the cost, uncertainty, and time to plan and deploy a network. Instead of removing a barrier, the Commission will be erecting another road block to competitive entry to the benefit of only large incumbents.

Additionally, the Petitioners provide no concrete evidence that publicly providing specific location information creates an increased security risk to their networks. Wireless providers already publicly identify substantial portions of their networks through their use of

[20] *See, e.g.*, *Chairman Pai Announces New Dashboard and Transparency Upgrades to FCC.gov*, News Release (Dec. 11, 2017) ("Since becoming Chairman, I've made it a priority to find ways to improve transparency at the FCC").

[21] *See, e.g.*, Open Signal, https://opensignal.com/networks; Sensorly, http://www.sensorly.com; nPerf, https://www.nperf.com/en/.

frequencies licensed under Part 101 of the Commission's rules.[22] There are tens of thousands of carrier-registered locations throughout the country. For instance, AT&T recently highlighted that it "holds 8,138 licenses supporting backhaul for its wireless network and main telecommunications links for its landline network."[23] The specific coordinates of the transmitters and receivers are publicly available in the Commission's Universal Licensing System. In addition to telecommunications providers, public safety agencies and critical infrastructure operators all utilize spectrum that requires the specific locations of transmitters and/or receivers to be publicly disclosed. This has been the case for decades.[24] Petitioners provide no evidence that this public disclosure has increased the security risk to any of these users, let alone any actual instance of a network breach that resulted from publicly disclosing the location of a transmitter.

Finally, as a matter of network design, network equipment is generally located in areas and through means that minimize the ability to alter or harm the network element. Wide-area transmitters are generally located on wireless antenna structures, and capacity cells are generally located high on building tops or facades. These are all a) physically visible so reporting the location makes little difference, and b) very difficult to access without special authorization.

Security concerns are a red herring that the Commission should soundly reject.

[22] *See* 47 C.F.R. § 101.103; Comments of AT&T Services, Inc., GN Docket No. 17-183 (filed Oct. 2, 2017), at 12 (AT&T Mid-band Comments); Comments of Verizon, GN Docket No. 17-183 (filed Oct. 2, 2017), at 21.

[23] AT&T Mid-band Comments at 12.

[24] *See Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Amendment of Part 21 of the Commission's Rules for the Domestic Public Fixed Radio Services, McCaw Cellular Communications, Inc. Petition for Rulemaking*, Report and Order, 13 FCC Rcd 13449 (1996).

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The market is ready for the 3.5 GHz band to come on line. The Commission can stimulate substantial economic activity – continued innovation and new investment – by maintaining the current rules and expeditiously terminating this proceeding.

Respectfully submitted,
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